

**REMARKS**

Claims 124-140 are pending in the application. Claims 128-134 are withdrawn by the examiner. Claims 124-127 and 135-140 are currently under examination. Claims 135-140 are new. New claims 135-140 are added to clarify the quenching and irradiation steps as noted by the examiner. The new claims are fully supported by the specification (see, for example, pages 18-21). Therefore, no new matter is introduced. The office action is discussed below:

***Rejections Withdrawn & Response to Arguments:***

On page 2 of the Office Action, the examiner has withdrawn the alleged written description-related rejection of claims 124-127 in view of the response filed on May 28, 2009. Applicants thank the examiner for the withdrawal.

Applicants also thank the examiner for the remarks that the language found in the instant specification, i.e. "pre-heating" at temperatures and for time periods disclosed in the instant specification" reads on "pre-annealing" as disclosed in prior art documents, such as Saum et al '540." Applicants also thank the examiner for recognizing the instant disclosure on page 30, lines 8-12, that heating is maintained at a preferred temperature for the specified time period, and the suggestion to point out that "the definition of annealing in the Saum et al Patent '540 in column 6, lines 34-41 overlaps by definition."

***Rejections Maintained & Response to Arguments:***

***Anticipation and Obviousness Rejections:***

On pages 3-6 of the Office Action, the examiner has maintained the alleged anticipation and obviousness rejections of claims 124-127 in view of Shalaby (the '411 patent) and Sun (the '049 patent), respectively.

On page 3 of the Office Action, the examiner alleges that claim language does not set forth any specific steps for "quenching residual free radicals", thus reads on

chemical methods for quenching free radicals. The examiner also alleges that the claim language does not specify the kind of irradiation or irradiation dose applied to the UHMWPE perform.

Applicants respectfully disagree with the examiner and submit that Shalaby mentions about "high energy radiation", which refers to sterilization dose of 2.50 Mrads, which is a "low dose irradiation" or "sterilization irradiation." More specifically, Shalaby discloses "a dose of 2.50 Mrads in three different gas environments, namely, air, nitrogen (practically pure), and acetylene" (see Shalaby Example 5, also see Example 7 and Figure 6). Such "low dose irradiation" or "sterilization irradiation" would generate residual free radicals and would not be "quenching residual free radicals in the ultrahigh molecular weight polyethylene preform subsequent to the irradiating step", as required by the claimed method. In this context, applicants request the examiner to consider the MPEP § 2111 that:

"The Patent and Trademark Office ("PTO") determines the scope of claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction "in light of the specification" as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364, [70 USPQ2d 1827] (Fed. Cir. 2004)."

Therefore, based on Shalaby disclosure, one skilled in the art would not use a radiation dose higher than Shalaby's "sterilization irradiation" (for example, a gamma radiation dose of 2.50 Mrads) to arrive at the claimed invention, because, as clarified above, such "low dose irradiation" or "sterilization irradiation" would generate residual free radicals and provides no methodology for quenching.

However, for additional clarity and in order to expedite the prosecution, applicants add new claims 135-137 to recite that the quenching step carried out by heating the irradiated UHMWPE preform to a temperature above ambient temperature.

Again, for additional clarity and in order to expedite the prosecution, applicants add new claims 138-140 to recite that the UHMWPE preform is irradiated at a dose of about 4.0 Mrads to about 30.0 Mrads.

On pages 3-4 of the Office Action, the examiner agreed that Shalaby teaches melting UHMWPE powder in contact with UHMWPE fibers to obtain a reinforced composite by heating for a time necessary to melt the powder and then cooling the composite.

The examiner alleges that the comprising language of the instant claims encompasses a step of incorporating UHMWPE fibers into a UHMWPE composite as described by Shalaby. The examiner opines that Shalaby discloses heating sheets of polymeric matrix and reinforcement to a temperature and for a time to melt the film and coat the reinforcement so that a unitary solid is produced upon cooling, corresponding to applicant's UHMWPE preform. Applicants disagree with the examiner and submit that the Shalaby's unitary solid material containing UHMWPE powder in contact with UHMWPE fibers does not correspond to the "UHMWPE preform" as recited in the instant claims for the reasons clarified previously, and as reiterated herein.

Applicants submit, as agreed by the examiner, that Shalaby discloses the melting of ultrahigh molecular weight polyethylene (UHMWPE) powder for consolidation followed by the production of UHMWPE fibers to reinforce UHMWPE composites. It is clearly noted in the '411 Shalaby patent that the "polymer-fiber construct" is made after melting the UHMWPE powder to reduce its melting point so that the fibers do not melt. That is, the "UHMWPE powder cannot be used directly in making composites because its melting point temperature is very close to that of the fiber so that fibers might also melt" (see the '411 Shalaby patent, Example 1, col. 6, lines 54-57). Thus, Shalaby's unitary solid material does not correspond to the claimed "UHMWPE preform". Therefore, Shalaby does not disclose a method of making an UHMWPE "construct polymer-fiber" by melting or pre-heating or pre-annealing the UHMWPE "construct polymer-fiber." Applicants point out that the examiner has not addressed this issue.

Moreover, according to the '411 patent melting of the UHMWPE (when it is in a powder form) component of the final product was performed in order to avoid melting of the fibers of the product. Hence, heating or melting to allow free radicals to recombine in the final product is not taught in the '411 patent, because, the final product made by Shalaby were not processed to recombine the free radicals in the final product by

quenching or any other methods. Thus, Shalaby would not be expected to result in recombination of free radicals. Accordingly, Shalaby's finished product will possess free radicals, and thus be susceptible to oxidation, as Shalaby disclosed at column 4, lines 56-58. Therefore, Shalaby (the '411 patent) process cannot yield a product made by any of the claimed processes.

As discussed above, applicants submit that the "low dose irradiation" or "sterilization irradiation" of Shalaby or Sun would generate residual free radicals and would not be quenching residual free radicals in the ultrahigh molecular weight polyethylene preform subsequent to the irradiating step, as required by the claimed method. Therefore, Shalaby and/or Sun do not anticipate the claimed methods nor make the claimed methods obvious. Accordingly, withdrawal of the anticipation and obviousness rejections of claims 124-127 are solicited.

***Double Patenting Rejections:***

On pages 4 and 6-9 of the Office Action, the examiner also has maintained the provisional rejection of claims 124-127 under the judicially created doctrine of obviousness-type double patenting allegedly as being unpatentable over pending claims of co-pending applications serial nos. 10/948,440, 10/197,209, 10/696,362, 10/901,089 and 10/197,263.

Applicants remind the examiner that none of the cited co-pending applications have received a notice of allowance. Therefore, the merits of this provisional rejection need not be discussed at this time. See MPEP § 822.01.

REQUEST


Applicants submit that claims 124-127 and 135-140 are in condition for allowance, and respectfully request favorable consideration to that effect. The examiner is invited to contact the undersigned at (202) 434-1610 should there be any questions.

Respectfully submitted,

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Date

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